IRON AND STEEL SCRAP

By Michael D. Fenton

Domestic survey data and tables were prepared by Sirirat Harris, statistical assistant.

Iron and steel scrap is a vital raw material for the production of new steel and cast-iron products. The steelmaking and foundry industries in the United States are highly dependent upon the ready availability of scrap from manufacturing operations and from the recovery of products that are no longer used or needed. The steel industry has been recycling steel scrap for more than 150 years. In 2002, domestic electric arc furnace (EAF) steel made primarily from recycled ferrous scrap in about 60 minimills was about 50% of the total raw steel produced. Consistent with international usage and Federal Government policy, the U.S. Geological Survey (USGS) reports all data on iron and steel in metric units, unless otherwise noted.

Steel scrap recycling conserves energy, landfill space, and raw materials. In 2002, the domestic steel industry recycled about 63 million metric tons (Mt) of steel cans, automobiles, appliances, construction materials, and other steel products. This resulted in an overall recycling rate of nearly 71% (American Iron and Steel Institute, 2003§[1]). The remelting of scrap requires much less energy than the production of iron and steel products from iron ore. Each year, steel recycling saves the energy equivalent of the electrical power needed for 1 year by approximately one-fifth of the houses in the United States (about 18 million). Consumption of iron and steel scrap by remelting reduces the burden on landfill disposal facilities and prevents the accumulation of abandoned steel products in the environment. Every metric ton of steel recycled saves 635 kilograms (kg) of coal, 54 kg of limestone, and 1.134 kg of iron ore that would otherwise be consumed to make the iron used in that steel.

In the United States, the primary source of obsolete steel is the automobile (Rich Tavoletti, Marketing Manager, American Iron and Steel Institute, unpub. data, July 2002). Of the ferrous metals used to make a typical 2002 U.S. family vehicle, 45% was recycled metal. The steel industry recovered and recycled about 12.8 Mt of iron and steel automobile scrap for recycling in 2002 (Gregory Crawford, Vice President, Steel Recycling Institute, oral comm., July 2003). The recycling rate of automobile scrap steel was 101% in 2002 compared with 95% in 2000 (American Iron and Steel Institute, 2003§). A recycling rate greater than 100% is a result of the steel industry recycling more steel from automobiles than was used in the production of new vehicles.

The recycling rate of obsolete appliance scrap had increased to 81% in 1997 from 20% in 1988, decreased to 72% in 1998, and rebounded to nearly 87% in 2002 (American Iron and Steel Institute, 2003§). During 2002, more than 1.9 Mt of steel was recovered from recycled appliances (Gregory Crawford, Vice President, Steel Recycling Institute, oral comm., July 2003). The typical appliance consists of about 75% steel, and 25% to 100% of the steel used in appliances is recycled. The recycling rate of steel cans increased to 61% in 1997 from 15% in 1988, decreased to 56% in 1998, and rebounded to almost 59% in 2002 (American Iron and Steel Institute, 2003§). The estimated rates of recycling of structural beams and plates in 2002 was 95%, and that of reinforcement bar and other materials was almost 58%. In 2002, an estimated 25% of all new homes built in the United States was framed in recycled steel.

Minimills, in which EAFs are used, consumed greater quantities of direct-reduced iron (DRI) to improve steel quality, and integrated steelmakers continued to use small quantities of DRI in blast furnaces as a process coolant. Minimills often used a feed mix that has equal proportions of DRI, pig iron, and scrap. Raw steel production in the U.S. steel industry increased during 2002 by nearly 2%, and DRI production increased nearly fourfold.

Environment

Steel mills that receive ferrous scrap have been exposed to radioactive materials without warning. Contaminated scrap is used in the form of shielded radioactive sources, which are typically installed in measurement gauges used in manufacturing operations or in hospital equipment. Accidental meltings of radioactive scrap have cost an average of $12 million to $15 million. If a shielded radioactive source is disposed of improperly or sent for recycling as scrap metal, then it may end up in a metal recycling facility and remelted with disastrous consequences. At least 26 accidental meltings of radioactive material have been reported in the United States since 1983 (U.S. Environmental Protection Agency, 2003§). In 2002, the U.S. Environmental Protection Agency (EPA) was funding the first national program to systematically address the problem of "orphan" radioactive sources that have no known owner. The program is designed to assist States in retrieving and disposing of radioactive sources that are found in nonnuclear facilities, particularly municipal waste disposal facilities, scrap yards, and steel mills, in a proper manner. Disposal may include disposal at permitted facilities, recycling, or reuse.

Mercury has been receiving increasing attention as a serious environmental pollutant because of its toxic and bioaccumulative properties. Bacteria in aquatic systems can convert mercury to methylmercury, which can be concentrated as it moves up the aquatic food chain, thereby contaminating fish and endangering humans and wildlife that consume these fish. Mercury poisoning can cause central nervous system, kidney, and liver damage in humans and impair child development. According to the EPA, significant manmade mercury-emission sources include cement and lime kilns, coal and oil burning facilities, copper smelters, garbage and hazardous waste incinerators, and petroleum refineries. Also, an estimated 15.6 metric tons per year of mercury is released from

[1]References that include a section mark (§) are found in the Internet References Cited section.

scrapped and recycled vehicles (Worden, 2001). The source of automotive mercury includes switches for active ride control systems, antilock braking systems, background lighting in automotive displays, convenience lighting, and high-intensity discharge headlamps. An estimated 200 metric tons (t) of mercury is in more than 210 million vehicles currently in use in 2002. Environmental groups are advocating "Design for Recycling," in which products are designed and produced to ensure safe and economical recycling of mercury, and phasing out all automotive uses of mercury as soon as possible (Clean Car Campaign, 2001§).

Brownfields are abandoned, idled, or underused industrial and commercial sites, such as steel mills, where expansion or redevelopment is complicated by real or perceived environmental contamination that can add cost, time, or uncertainty to a redevelopment project (Envirotools, 2002§). There are about 130,000 to 450,000 contaminated commercial and industrial sites in the United States, and the cost of cleaning them may be as much as $650 billion.

In January 2002, the Small Business Liability Relief and Brownfields Revitalization Act (H.R. 2869) became law (Public Law 107-118). H.R. 2869 incorporates the Brownfields Revitalization and Environmental Restoration Act of 2001 (S. 350) and the Small Business Liability Protection Act (H.R. 1831). The law codified and expanded the EPA's brownfields program by authorizing funding for assessment and cleanup of brownfields properties. It exempted contiguous property owners and prospective purchasers from Superfund liability and clarified appropriate inquiry for innocent landowners. It also authorized funding for State response programs and limited the EPA Superfund enforcement authority at sites cleaned up under a State response program. Certain household, nonprofit, and small-business generators of municipal solid waste are exempted from liability for Superfund response costs at National Priority List sites. Settlements are expedited for certain persons on the basis of a limited ability to pay contributors of hazardous substance.

Consumption

Domestic data for ferrous scrap were derived from voluntary monthly or annual surveys of U.S. scrap-consuming operations by the USGS. About 48% of the known manufacturers of pig iron and raw steel responded to the surveys. Their responses represented about 54% of estimated total scrap consumption by this class of consumers. The remaining 46% of scrap consumption was estimated on the basis of prior reports. Of the iron foundries, manufacturers of steel castings, and miscellaneous users, about 33% of the surveyed establishments, which represented about 66% of estimated scrap consumption by these consumers, responded to the annual survey. Total consumption for these two classes of consumers was estimated by using statistical methods and prior reports. Actual survey data accounted for about 67% of total estimated scrap consumption by all classes of scrap consumers.

In 2002, brokers, dealers, and other outside sources supplied domestic consumers with 52 Mt of all types of ferrous scrap at an estimated delivered value of more than $4.8 billion and exported 9.0 Mt (excluding used rails for rerolling and other uses and ships, boats, and other vessels for scrapping) valued at $1.3 billion (tables 1, 8, 11). In 2001, domestic consumers received 52 Mt at an estimated delivered value of more than $3.9 billion; exports totaled 7.4 Mt valued at $1.1 billion. In 2002, tonnage for received quantities did not change, but tonnage increased for exported quantities by more than 21%. The value of received scrap grades increased by more than 43%, and that of exported scrap grades increased by about 18% during 2002.

Raw steel production was 91.6 Mt in 2002 compared with 90.1 Mt in 2001 (American Iron and Steel Institute, 2002, p. 75). The share of raw steel produced by electric and basic oxygen furnaces was 50% for each. In 2002, continuous cast steel production represented 97% of total raw steel production; this was about the same as that of 2001. Raw steel production capability did not change from that of 2001 (114 Mt).

Steel mills accounted for 83% of all scrap received from brokers, dealers, and other outside sources; iron foundries and miscellaneous users received 14%; and steel foundries received 3% (table 1). Apparent total domestic consumption of ferrous scrap was 50 Mt of net receipts (total receipts minus shipments) and 17 Mt of home scrap (table 2). Stocks of ferrous scrap at consumers' plants increased by more than 4% to 5.1 Mt (table 1). Total domestic consumption was nearly 69 Mt, which was a 3% decrease compared with that of 2001. The total market for U.S.-produced scrap (net receipts plus exports minus imports) was 57.8 Mt compared with 56.6 Mt in 2001. Feedstock used in electric furnaces by all iron and steel product manufacturers comprised scrap, 91%; pig iron, 6%; and DRI, 3% (table 4). Total consumption of DRI was 22% greater than that of 2001.

Net shipments of all grades of steel mill products were 90.7 Mt, which was an increase of 1.1% from the 89.7 Mt shipped in 2001 (American Iron and Steel Institute, 2002, p. 27). Imports of steel mill products increased to 29.6 Mt from 27.3 Mt in 2001. Exports of steel mill products decreased to 5.5 Mt from 5.6 Mt in 2001 (American Iron and Steel Institute, 2002, p. 45).

The U.S. apparent supply of steel mill products remained at the same level (about 107 Mt) as in 2001. As a share of the U.S. market, imports of steel mill products increased to 28% from 26% in 2001. Pig iron production decreased to 40.2 Mt from 42.1 Mt in 2001 (American Iron and Steel Institute, 2002, p. 80). As reported by the U.S. Census Bureau, iron castings shipments totaled 7.8 Mt for 2002 and 8.3 Mt for 2001. Steel castings shipments (including investment castings) totaled 0.7 Mt in 2002 and 0.8 Mt in 2001.

Prices

The average composite delivered price of No. 1 heavy-melting steel scrap, calculated from prices per long ton published monthly by American Metal Market, was $92.56 per metric ton. The price ranged from a low of $68.86 per ton in January to a high of $101.98 per ton in September (table 8). The average composite delivered price of No. 1 heavy-melting steel scrap, calculated from prices per long ton published weekly in Iron Age Scrap Price Bulletin, was $88.21 per ton; the price ranged from a low of $63.78 per ton in February to a high of $97.56 per ton in September.

Based on weekly quotations by Iron Age Scrap Price Bulletin for 18-8 (18% chromium, 8% nickel) stainless steel scrap (bundles and solids) delivered to consumers in the Pittsburgh, PA, area, the average price increased by 9% to $706 per ton from $647 per ton in 2001.

The unit value of total ferrous scrap exports (excluding used rails for rerolling and other uses and ships, boats, and other vessels for scrapping) decreased by more than 5% to about $144 per ton compared with that of 2001 (table 11). The unit value of total imports, which was about $121 per ton, was about 14% more than that of 2001 (table 14).

Foreign Trade

Foreign trade valuation continued to be reported on a free alongside ship basis for exports and on a customs value basis for imports. In 2002, the U.S. trade surplus for all classes of ferrous scrap (including used rails for rerolling and other uses and ships, boats, and other vessels for scrapping) was 5.7 Mt valued at $897 million (U.S. Census Bureau, unpub. data, 2002). This represented an increase of 21% in quantity and an increase of 5% in value compared with the 2001 surplus of 4.7 Mt and $852 million.

Total U.S. exports of carbon steel and cast-iron scrap (excluding alloy steel; rerolling and other uses; ships, boats, and other vessels for scrapping; and stainless steel) went to 65 countries (the same as in 2001) and totaled 8.0 Mt (a 25% increase) valued at 844 million (a 29% increase) for an average of $105 per ton (U.S. Census Bureau, unpub. data, 2002). The largest tonnages went to China (2.4 Mt), the Republic of Korea (2.0 Mt), Mexico (1.2 Mt), and Canada (1.1 Mt). These four countries received 83% of the total quantity valued at $687 million, which was 81% of the total value.

Total U.S. exports of stainless steel scrap went to 46 countries (3 more than in 2001) and consisted of 343,000 t (a 23% decrease) valued at $253 million (a 7% decrease) for an average of $735 per ton (a 20% increase) (U.S. Census Bureau, unpub. data, 2002). The largest tonnages went to Taiwan (102,000 t), the Republic of Korea (76,000 t), China (69,000 t), Canada (34,000 t), and Spain (21,000 t). These countries received 58% of the total quantity valued at $148 million, which was 58% of the total value.

U.S. exports of alloy steel scrap (excluding stainless steel) were shipped to 47 countries (the same as in 2001) and consisted of 707,000 t (a 16% decrease) valued at $205 million (a 39% increase) for an average of $289 per ton (a 16% increase) (U.S. Census Bureau, unpub. data, 2002). The largest tonnages went to China (247,000 t), Mexico (165,000 t), and Canada (152,000 t). These countries received 80% of the total quantity valued at $158 million, which was 77% of the total value.

World Review

Iron and steel scrap is an important raw material for the steel and foundry industries. Because scrap comes from such sources as discarded cars and consumer durables, industrial machinery, manufacturing operations, and old buildings, the relatively mature industrialized economies are generally the main exporters of scrap to lesser developed steelmaking countries.

Germany exported the most iron and steel scrap in 2002, followed by Japan, Russia, the United Kingdom, Ukraine, France, and the Netherlands (International Iron and Steel Institute, 2002, p. 102). The five most significant importing nations, in decreasing order of importance, were Chile, the Republic of Korea, Spain, Belgium and Luxembourg, and Italy (International Iron and Steel Institute, 2002, p. 104).

Outlook

Because of the close interdependence of the steelmaking and ferrous scrap industries, an examination and forecast of the steel industry in the context of the global economy will serve as the bellwether of the scrap industry. In late 2002, the International Iron and Steel Institute (IISI) offered a revised forecast downward for 2002 and 2003 because of rapidly changing world economic conditions (International Iron and Steel Institute, 2002§). The global economic picture was described as so uncertain by the IISI that it considered it almost impossible to make accurate predictions for the next 2 years. Growth of the world gross domestic product (GDP) was projected to be 1.7% and 2.9% for 2002 and 2003, respectively. A key influence on these projections is the economic activity of China, in which the GDP is estimated to rise by 7.5% and 7.8% in 2002 and 2003, respectively. The growth rate of the remainder of the world was projected to be 1.6% and 2.8% for 2002 and 2003, respectively. Similarly, U.S. economists polled by the Federal Reserve Bank of Philadelphia (PA) changed their projected annualized real GDP growth in the United States to 2.6% for 2003, down from the previous estimate of 3% (Stundza, 2002a§).

The IISI also revised projections downward of world consumption of finished steel products to 4.2% and 4.9% in 2002 and 2003, respectively (Stundza, 2002a§). China's finished steel-product consumption was projected to increase by 14.8% and 10.3% in 2002 and 2003, respectively. Steel consumption increases in the rest of the world have been estimated to be 1.2% and 3.1% in 2002 and 2003, respectively. The North American Free Trade Association (NAFTA) GDP growth forecast was 2.5% and 3.5% for 2002 and 2003, respectively.

Since 1998, substantial overcapacity among world steelmakers outside North America has produced a flood of low-priced imports into the United States to the detriment of domestic steelmakers. During 2002, the steel industry united to seek legal remedies against imported steel products. It received temporary relief under section 201 of the 1974 Trade Act—3 years of tariffs of as much as 30% on certain steel imports. Relief from much of this import activity is expected to allow the steel industry to restructure during 2003 to become more competitive in world.

After 18 months of decline, manufacturing grew for 7 months in 2002, but by yearend, the overall economy was barely growing (Stundza, 2002a§). J.P. Morgan Securities predicted that weak sales and volume numbers for some major metals processing and distribution firms could be exacerbated by the continuing weakness in U.S. manufacturing through 2003. Purchasing Magazine's steel price forecast for cold-rolled, hot-rolled, and galvanized sheet combined was 4% less than that estimated for 2002 (Stundza, 2002b§). Nevertheless, 2003 may be a better year economically for the steelmaking and ferrous scrap industries than expected by many because of section 201 tariffs, very low interest rates, continuing fiscal stimulus, strong productivity growth, low inflation, and very low business inventories.

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GENERAL SOURCES OF INFORMATION

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TABLE 1
SALIENT U.S. IRON AND STEEL SCRAP, PIG IRON, AND DIRECT-REDUCED IRON STATISTICS[1]

(Thousand metric tons and thousand dollars)

	1998	1999	2000	2001	2002
Manufacturers of pig iron and raw steel and castings:[2]					
Ferrous scrap consumption	58,000	56,000	59,000	57,000	56,000
Pig iron consumption	49,000	48,000	49,000	47,000	42,000
Direct-reduced iron consumption	1,600	2,200	2,300	1,800	2,200
Net receipts of ferrous scrap[3]	44,000	43,000	45,000	43,000	43,000
Home scrap production[4]	14,000	13,000	14,000	13,000	13,000
Ending stocks of ferrous scrap, December 31	4,700	4,800	4,700	4,300	4,300
Manufacturers of steel castings:[5]					
Ferrous scrap consumption	2,000	1,900	2,200	2,200	1,800
Pig iron consumption	14	11	11	32	35
Net receipts of ferrous scrap[3]	1,300	1,200	1,200	1,400	1,300
Home scrap production[4]	710	690	980	820	590
Ending stocks of ferrous scrap, December 31	83	230	150	160	120
Iron foundries and miscellaneous users:[5]					
Ferrous scrap consumption	13,000	13,000	13,000	12,000	11,000
Pig iron consumption	1,200	1,200	1,200	1,100	1,500
Direct-reduced iron consumption	12	13	16	13	13
Net receipts of ferrous scrap[3]	7,900	7,700	7,800	7,600	7,200
Home scrap production[4]	5,100	5,000	4,800	4,300	3,800
Ending stocks of ferrous scrap, December 31	440	430	430	440	650
Totals, all manufacturing types:					
Ferrous scrap consumption	73,000	71,000	74,000	71,000	69,000
Pig iron consumption	50,000	49,000	50,000	48,000	44,000
Direct-reduced iron consumption	1,600	2,200	2,300	1,800	2,200
Net receipts of ferrous scrap[3]	53,000	51,000	54,000	52,000	52,000
Home scrap production[4]	20,000	19,000	20,000	18,000	17,000
Ending stocks, December 31:					
Ferrous scrap at consumer plants	5,300	5,500	5,300	4,900	5,100
Pig iron at consumer and supplier plants	570	720	800	790	800
Direct-reduced iron at consumer plants	290	310	290	320	270
Exports:[6]					
Ferrous scrap (includes tinplate and terneplate)[7]					
Quantity	5,570	5,520	5,760	7,440	8,950
Value	805,000	738,000	1,000,000	1,130,000	1,290,000
Pig iron, all grades					
Quantity	87	83	72	44	34
Value	11,700	11,100	9,620	5,580	4,910
Direct-reduced iron, steelmaking grade					
Quantity	5	3	2	1	1
Value	487	302	241	83	100
Imports for consumption:[6]					
Ferrous scrap (includes tinplate and terneplate)[7]					
Quantity	3,060	3,670	3,360 [r]	2,630	3,130
Value	402,000	383,000	385,000	274,000	376,000
Pig iron, all grades					
Quantity	5,150	4,990	4,970	4,370	4,620
Value	722,000	527,000	601,000	479,000	527,000
Direct-reduced iron, steelmaking grade					
Quantity	939	950	1,090	1,650	2,010
Value	118,000	86,500	119,000	145,000	195,000

[r]Revised.

[1]Data are rounded to no more than two significant digits, except trade data, which are rounded to no more than three significant digits; may not add totals show

[2]Includes manufacturers of raw steel that also produce steel castings.

[3]Net receipts of scrap is defined as receipts from brokers, dealers, and other outside sources plus receipts from other own-company plants minus shipments.

[4]Home scrap production includes recirculating scrap that results from current operations and obsolete home scrap.

[5]Some consumers in the "Manufacturers of steel castings" category also produce iron castings; some consumers in the "Iron foundries and miscellaneous users" category also produce steel castings.

[6]Data from U.S. Census Bureau. Export valuation is free alongside ship, and import valuation is customs value.

[7]Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping.

TABLE 2

U.S. CONSUMER RECEIPTS, PRODUCTION, CONSUMPTION, SHIPMENTS, AND STOCKS OF IRON AND STEEL SCRAP IN 2002, BY GRADE[1]

(Thousand metric tons)

Grade	Receipts of scrap		Production of home scrap		Consumption of purchased and home scrap	Shipments of scrap	Ending stocks, December 31
	From brokers, dealers, and other outside sources	From other own-company plants	Recirculating scrap from current operations	Obsolete scrap[2]			
Manufacturers of pig iron and raw steel and castings:							
Carbon steel:							
Low-phosphorus plate and punchings	260	--	4	--	280	1	15
Cut structural and plate	4,400	130	860	51	5,100	68	250
No. 1 heavy-melting steel	4,700	210	3,300	13	8,300	79	610
No. 2 heavy-melting steel	5,400	62	480	1	6,000	1	410
No. 1 and electric furnace bundles	5,000	86	1,700	--	6,500	120	310
No. 2 and all other bundles	850	17	3	--	900	--	42
Electric furnace, 1 foot and under (not bundles)	(3)	--	170	--	140	37	(3)
Railroad rails	260	23	44	--	320	--	10
Turnings and borings	2,000	35	58	--	2,200	2	120
Slag scrap	920	100	1,600	--	2,100	560	160
Shredded or fragmentized	9,400	760	330	--	11,000	98	530
No. 1 busheling	5,300	100	120	--	5,400	80	310
Steel cans, post consumer	210	(3)	44	--	270	--	81
All other carbon steel scrap	2,100	60	2,300	3	4,200	230	390
Stainless steel scrap	810	21	310	--	1,200	1	41
Alloy steel (except stainless)	140	8	470	--	630	8	38
Ingot mold and stool scrap	3	--	120	80	70	130	18
Machinery and cupola cast iron	98	--	4	--	96	1	9
Cast-iron borings	270	--	(3)	--	260	(3)	10
Motor blocks	8	--	--	--	8	--	1
Other iron scrap	260	51	310	--	570	150	370
Other mixed scrap	960	29	340	6	1,200	49	600
Total	43,000	1,700	13,000	150	56,000	1,600	4,300
Manufacturers of steel castings:							
Carbon steel:							
Low-phosphorus plate and punchings	330	2	84	(3)	440	(3)	30
Cut structural and plate	130	--	11	10	140	10	14
No. 1 heavy-melting steel	49	--	24	--	72	--	4
No. 2 heavy-melting steel	11	--	--	--	11	--	(3)
No. 1 and electric furnace bundles	11	--	--	--	12	--	(3)
No. 2 and all other bundles	--	--	--	--	--	--	--
Electric furnace, 1 foot and under (not bundles)	6	5	3	(3)	14	--	(3)
Railroad rails	21	--	58	--	78	(3)	2
Turnings and borings	25	--	5	18	31	18	(3)
Slag scrap	1	--	3	--	4	--	(3)
Shredded or fragmentized	120	--	--	--	120	--	2
No. 1 busheling	71	--	6	--	79	--	4
Steel cans, post consumer	--	--	--	(3)	--	(3)	--
All other carbon steel scrap	76	--	130	9	210	9	6
Stainless steel scrap	350	(3)	50	28	390	70	39
Alloy steel (except stainless)	48	1	36	(3)	85	1	6
Ingot mold and stool scrap	10	--	43	--	33	19	6
Machinery and cupola cast iron	--	--	--	--	--	--	--
Cast-iron borings	--	--	(3)	--	(3)	--	(3)
Motor blocks	1	--	--	--	1	--	(3)
Other iron scrap	6	--	57	(3)	63	1	1
Other mixed scrap	32	--	1	14	46	1	3
Total	1,300	8	510	79	1,800	130	120

See footnotes at end of table.

TABLE 2--Continued

U.S. CONSUMER RECEIPTS, PRODUCTION, CONSUMPTION, SHIPMENTS, AND STOCKS OF IRON AND STEEL SCRAP IN 2002, BY GRADE[1]

(Thousand metric tons)

Grade	Receipts of scrap		Production of home scrap		Consumption of purchased and home scrap	Shipments of scrap	Ending stocks, December 31
	From brokers, dealers, and other outside sources	From other own-company plants	Recirculating scrap from current operations	Obsolete scrap[2]			
Iron foundries and miscellaneous users:							
Carbon steel:							
Low-phosphorus plate and punchings	810	(3)	130	(3)	950	(3)	12
Cut structural and plate	1,400	27	110	18	1,500	(3)	120
No. 1 heavy-melting steel	160	3	13	(3)	220	2	5
No. 2 heavy-melting steel	240	1	--	--	250	(3)	3
No. 1 and electric furnace bundles	68	1	32	--	100	--	5
No. 2 and all other bundles	75	--	2	--	76	4	4
Electric furnace, 1 foot and under (not bundles)	150	--	1	--	150	1	2
Railroad rails	95	--	33	(3)	130	(3)	5
Turnings and borings	77	(3)	3	--	80	4	4
Slag scrap	21	--	13	--	34	3	1
Shredded or fragmentized	1,700	21	(3)	--	1,700	(3)	55
No. 1 busheling	930	220	57	--	960	39	270
Steel cans, post consumer	24	--	--	--	24	--	(3)
All other carbon steel scrap	110	(3)	4	--	120	(3)	6
Stainless steel scrap	3	--	4	--	8	(3)	5
Alloy steel (except stainless)	5	--	1	--	5	--	1
Ingot mold and stool scrap	59	--	3	--	62	--	9
Machinery and cupola cast iron	690	(3)	250	(3)	980	1	53
Cast-iron borings	100	86	19	1	210	4	2
Motor blocks	270	11	730	--	1,000	4	16
Other iron scrap	210	16	2,300	--	2,500	5	56
Other mixed scrap	130	4	100	(3)	230	1	12
Total	7,200	390	3,800	19	11,000	70	650
Totals for all manufacturing types:							
Carbon steel:							
Low-phosphorus plate and punchings	1,400	2	220	(3)	1,700	2	57
Cut structural and plate	5,900	150	980	79	6,800	77	380
No. 1 heavy-melting steel	4,900	220	3,300	13	8,600	81	620
No. 2 heavy-melting steel	5,700	63	480	1	6,200	1	420
No. 1 and electric furnace bundles	5,100	87	1,800	--	6,600	120	320
No. 2 and all other bundles	930	17	5	--	980	4	46
Electric furnace, 1 foot and under (not bundles)	150	5	170	(3)	300	37	2
Railroad rails	380	23	140	(3)	530	(3)	17
Turnings and borings	2,100	35	67	18	2,300	23	120
Slag scrap	950	100	1,600	--	2,100	570	160
Shredded or fragmentized	11,000	780	330	--	12,000	99	590
No. 1 busheling	6,300	320	190	--	6,400	120	580
Steel cans, post consumer	240	(3)	44	(3)	300	(3)	81
All other carbon steel scrap	2,300	60	2,400	13	4,500	240	400
Stainless steel scrap	1,200	21	370	28	1,600	70	85
Alloy steel (except stainless)	190	9	510	(3)	720	9	45
Ingot mold and stool scrap	71	--	170	80	170	150	34
Machinery and cupola cast iron	790	(3)	260	(3)	1,100	1	62
Cast-iron borings	370	86	19	1	470	4	13
Motor blocks	280	11	730	--	1,000	4	17
Other iron scrap	480	67	2,600	(3)	3,200	150	430
Other mixed scrap	1,100	33	450	20	1,500	51	610
Total	52,000	2,100	17,000	250	69,000	1,800	5,100

-- Zero.

[1]Data are rounded to no more than two significant digits; may not add to totals shown.

[2]Obsolete home scrap includes ingot molds, stools, and scrap from old equipment, buildings, etc.

[3]Less than 1/2 unit.

TABLE 3
U.S. CONSUMER RECEIPTS, PRODUCTION, CONSUMPTION, SHIPMENTS,
AND STOCKS OF PIG IRON AND DIRECT-REDUCED IRON IN 2002[1]

(Thousand metric tons)

	Receipts	Production	Consumption	Shipments	Stocks, December 31
Manufacturers of pig iron, raw steel, and castings:					
Pig iron	10,000 [2]	34,000	42,000	590	660
Direct-reduced iron (DRI)	2,100 [3]	W	2,200	19	270
Manufacturers of steel castings:					
Pig iron	33	[4]	35	[5]	3
DRI	[5]	--	[5]	--	[5]
Iron foundries and miscellaneous users:					
Pig iron	1,500	[4]	1,500	26	140
DRI	12	1	13	--	[5]
Totals for all manufacturing types:					
Pig iron	12,000	34,000	44,000	620	800
DRI	2,100	W	2,200	19	270

W Withheld to avoid disclosing company proprietary data. -- Zero.

[1]Data are rounded to no more than two significant digits; may not add to totals shown.

[2]Includes 1,500,000 metric tons purchased by electric furnace steel producers.

[3]Includes 1,000,000 metric tons purchased by integrated steel producers.

[4]Withheld to avoid disclosing company proprietary data; included in "Totals for all manufacturing types."

[5]Less than 1/2 unit.

TABLE 4

S. CONSUMPTION OF IRON AND STEEL SCRAP, PIG IRON, AND DIRECT-REDUCED IRON IN 2002, BY TYPE OF FURNACE OR OTHER US

(Thousand metric tons)

	Manufacturers of pig iron and raw steel and castings			Manufacturers of steel castings			Iron foundries and miscellaneous users			Totals for all manufacturing types		
	Scrap	Pig iron	Direct-reduced iron (DRI)	Scrap	Pig iron	DRI	Scrap	Pig iron	DRI	Scrap	Pig iron	DRI
Blast furnace	1,000	--	410	--	--	--	--	--	--	1,000	--	410
Basic oxygen process	13,000	40,000	55	--	--	--	--	--	--	13,000	40,000	55
Electric furnace	42,000	2,200	1,800	1,700	34	(2)	5,400	1,000	2	49,000	3,200	1,800
Cupola furnace	--	--	--	100	1	--	5,900	520	11	6,000	520	11
Other (including air furnaces)	W	--	--	2	--	--	W	W	--	2	W	--
Direct castings[3]	--	36	--	--	--	--	--	--	--	--	36	--
Total	56,000	42,000	2,200	1,800	35	(2)	11,000	1,500	13	69,000	44,000	2,200

W Withheld to avoid disclosing company proprietary data; included with "Electric furnace." -- Zero.

[1]Data are rounded to no more than two significant digits; may not add to totals shown.

[2]Less than 1/2 unit.

[3]Includes ingot molds and stools.

TABLE 5

IRON AND STEEL SCRAP SUPPLY AVAILABLE FOR CONSUMPTION IN 2002, BY REGION AND STATE[1, 2]

(Thousand metric tons)

Region and State	Receipts of scrap		Production of home scrap			
	From brokers, dealers, and other outside sources	From other own company plants	Recirculating scrap resulting from current operations	Obsolete scrap[3]	Shipments of scrap[4]	New supply available for consumption
New England and Middle Atlantic:						
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	46	--	27	(5)	(5)	73
New Jersey and New York	1,800	--	100	1	1	1,900
Pennsylvania	3,500	99	2,200	74	16	5,900
Total	5,400	99	2,300	75	17	7,900
North Central:						
Illinois	3,100	79	930	2	64	4,000
Indiana	3,800	160	4,400	33	650	7,700
Iowa, Nebraska, South Dakota	1,900	3	210	--	(6)	2,100
Kansas and Missouri	790	2	230	65	83	1,000
Michigan	3,000	96	1,800	(5)	520	4,300
Minnesota	430	170	78	--	(6)	670
Ohio	6,400	250	1,700	29	180	8,300
Wisconsin	1,600	2	1,000	(5)	5	2,600
Total	21,000	760	10,000	130	1,500	31,000
South Atlantic:						
Delaware and Maryland	630	(5)	430	(5)	(6)	1,000
Florida and Georgia	840	--	150	--	(5)	990
North Carolina and South Carolina	2,800	(6)	330	6	(6)	3,100
Virginia and West Virginia	1,800	(6)	580	(6)	(6)	2,400
Total	6,000	120	1,500	23	93	7,600
South Central:						
Alabama and Mississippi	4,100	(6)	650	(6)	150	4,600
Arkansas, Louisiana, Oklahoma	4,300	(6)	380	(6)	(6)	4,800
Kentucky and Tennessee	3,300	280	390	--	(6)	4,000
Texas	3,400	650	510	3	15	4,600
Total	15,000	1,100	1,900	17	210	18,000
Mountain and Pacific:						
Arizona, Colorado, Idaho, Montana, Utah	2,300	(5)	520	(6)	(6)	2,800
California, Oregon, Washington	2,100	W	260	(5)	(6)	2,400
Total	4,400	W	780	9	2	5,200
Grand total	52,000	2,100	17,000	250	1,800	69,000

W Withheld to avoid disclosing company proprietary data. -- Zero.

[1]Supply available for consumption is a net figure computed by adding production to receipts and deducting scrap shipped during the year. Th difference in stock levels at the beginning and end of the year is not taken into consideration.

[2]Data are rounded to no more than two significant digits; may not add to totals shown.

[3]Obsolete scrap includes ingot molds, stools, and scrap from old equipment, buildings, etc.

[4]Includes scrap shipped, transferred, or otherwise disposed of during the year.

[5]Less than 1/2 unit.

[6]Withheld to avoid disclosing company proprietary data; included in "Total" or "Grand total."

TABLE 6

U.S. CONSUMPTION OF IRON AND STEEL SCRAP AND PIG IRON IN 2002, BY REGION AND STATE[1, 2, 3]

(Thousand metric tons)

Region and State	Manufacturers of pig iron and raw steel and castings		Manufacturers of steel castings		Iron foundries and miscellaneous users		Totals for all manufacturing types	
	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron	Scrap	Pig iron
New England and Middle Atlantic:								
Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont	1,600	24	20	(4)	400	17	2,000	41
Pennsylvania	5,600	2,800	150	1	440	61	6,200	2,900
Total	7,200	2,800	170	1	840	78	8,200	2,900
North Central:								
Illinois	3,500	2,700	140	2	570	21	4,200	2,700
Indiana	6,800	14,000	51	1	1,100	150	7,900	15,000
Iowa, Kansas, Minnesota, Missouri, Nebraska, South Dakota, Wisconsin	3,300	110	700	3	2,300	380	6,200	490
Michigan	2,700	4,800	31	(4)	1,400	150	4,100	4,900
Ohio	6,600	6,900	350	2	1,100	110	8,100	7,000
Total	23,000	29,000	1,300	8	6,500	800	31,000	30,000
South Atlantic:								
Delaware, Maryland, Virginia, West Virginia	2,900	W	W	W	480	21	3,400	4,600
Florida, Georgia, North Carolina, South Carolina	3,600	W	W	W	480	38	4,100	130
Total	6,500	4,600	4	1	960	58	7,500	4,700
South Central:								
Alabama, Kentucky, Mississippi, Tennessee	5,900	W	200	W	2,300	W	8,400	4,700
Arkansas, Louisiana, Oklahoma	4,700	W	25	W	110	W	4,800	470
Texas	4,200	40	69	W	330	31	4,600	95
Total	15,000	4,700	290	24	2,700	590	18,000	5,300
Mountain and Pacific:								
Arizona, Colorado, Idaho, Montana, Utah	2,700	W	5	(4)	130	W	2,800	1,500
California, Oregon, Washington	2,100	W	74	(4)	220	W	2,300	9
Total	4,700	1,500	79	(4)	350	10	5,200	1,500
Grand total	56,000	42,000	1,800	35	11,000	1,500	69,000	44,000

W Withheld to avoid disclosing company proprietary data; included in "Total" or "Grand total."

[1]Includes recirculating scrap resulting from current operations and home-generated obsolete scrap.

[2]Includes molten pig iron used for ingot molds and direct castings.

[3]Data are rounded to no more than two significant digits; may not add to totals shown.

[4]Less than 1/2 unit.

TABLE 7

U.S. CONSUMER STOCKS OF IRON AND STEEL SCRAP AND PIG IRON, DECEMBER 31, 2002, BY REGION AND STATE[1]

(Thousand metric tons)

Region and State	Carbon steel[2]	Stainless steel	Alloy steel[3]	Cast iron[4]	Other grades of scrap	Total scrap	Pig iron
New England and Middle Atlantic:							
Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	1	(5)	(5)	(5)	W	1	1
New Jersey and New York	76	2	2	2	W	81	1
Pennsylvania	280	22	15	19	5	340	6
Total	360	23	17	22	5	420	8
North Central:							
Illinois	260	(5)	W	12	(5)	270	13
Indiana	410	5	W	100	22	540	210
Iowa, Kansas, Missouri, Nebraska, South Dakota	170	(5)	(5)	9	1	180	98
Michigan	140	5	1	11	5	160	39
Minnesota and Wisconsin	40	15	4	9	(5)	69	9
Ohio	380	33	14	39	(5)	470	27
Total	1,400	58	21	190	28	1,700	400
South Atlantic:							
Delaware, Maryland, Virginia, West Virginia	190	(5)	W	15	12	220	56
Florida, Georgia, North Carolina, South Carolina	170	(5)	W	30	2	210	35
Total	370	(5)	3	45	14	430	91
South Central:							
Alabama, Kentucky, Mississippi, Tennessee	870	W	W	270	W	1,600	130
Arkansas, Louisiana, Oklahoma	320	W	W	2	W	320	140
Texas	250	W	W	4	W	260	31
Total	1,400	3	3	280	500	2,200	300
Mountain and Pacific:							
Arizona, Colorado, Idaho, Montana, Utah	150	--	W	5	--	150	W
California, Oregon, Washington	84	1	W	17	66	170	W
Total	230	1	1	22	66	320	4
Grand total	3,800	85	45	550	610	5,100	800

W Withheld to avoid disclosing company proprietary data; included in "Total" or "Grand total." -- Zero.

[1]Data are rounded to no more than two significant digits; may not add to totals shown.

[2]Excludes rerolling rails.

[3]Excludes stainless steel.

[4]Includes borings.

[5]Less than 1/2 unit.

TABLE 8
U.S. AVERAGE MONTHLY PRICE AND COMPOSITE PRICE FOR NO. 1 HEAVY-MELTING STEEL, WITH ANNUAL AVERAGES[1]

(Dollars per metric ton)

Period	Chicago, IL	Philadelphia, PA	Pittsburgh, PA	Composite price
2002:				
January	69.10	70.44	67.04	68.86
February	73.85	73.56	78.71	75.37
March	74.31	80.76	88.60	81.22
April	83.71	90.01	98.02	90.58
May	91.62	99.40	108.75	99.93
June	95.57	95.66	108.75	100.00
July	95.96	95.47	108.75	100.06
August	95.96	95.47	108.75	100.06
September	98.91	98.27	108.75	101.98
October	97.29	98.42	108.75	101.49
November	92.02	92.26	102.85	95.71
December	92.02	91.53	102.85	95.47
Annual average:				
2002	88.36	90.10	99.22	92.56
2001	72.93	73.78	77.99	74.90

[1]Calculated by the U.S. Geological Survey from prices published in American Metal Marke

TABLE 9
U.S. EXPORTS OF IRON AND STEEL SCRAP, BY COUNTRY[1, 2]

(Thousand metric tons and thousand dollars)

	2001		2002	
Country	Quantity	Value	Quantity	Value
Canada	1,090	125,000	1,290	149,000
China	2,570	419,000	2,650	447,000
Germany	19	12,900	10	4,250
Greece	32	2,830	(3)	5
Guatemala	(3)	122	24	2,250
Hong Kong	47	19,200	46	15,100
India	160	30,100	109	20,400
Indonesia	38	4,720 r	8	2,440
Italy	9 r	5,170	27	4,910
Japan	48	28,300	30	21,200
Korea, Republic of	1,500	190,000	2,080	234,000
Malaysia	375	36,100	318	33,100
Mexico	821	79,800	1,350	143,000
Netherlands	15	8,840	2	1,040
Philippines	14	7,550	8	3,740
Singapore	4	957	33	3,770
Spain	12	624	40	16,200
Taiwan	297	103,000	276	103,000
Thailand	34	3,670	194	21,900
Turkey	276	23,600	374	37,100
United Kingdom	16	5,650	14	5,770
Vietnam	5	1,750	10	3,130
Other	60 r	19,200 r	49	17,200
Total	7,440	1,130,000	8,950	1,290,000

rRevised.
[1]Data are rounded to no more than three significant digits; may not add to totals shown
[2]Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping. Export valuation is free alongside ship. The United States exported scrap t 76 countries in 2001 and 77 countries in 2002.
[3]Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 10

U.S. EXPORTS OF IRON AND STEEL SCRAP, BY CUSTOMS DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

	2001		2002	
Customs district	Quantity	Value	Quantity	Value
Boston, MA	591	53,100	587	50,200
Buffalo, NY	96	22,200	119	23,000
Columbia-Snake River, OR/WA	66	14,900	190	28,200
Detroit, MI	167	23,500	298	38,400
Honolulu, HI	97	13,100	138	16,900
Houston-Galveston, TX	63	31,000	62	36,300
Laredo, TX	196	21,200	319	41,200
Los Angeles, CA	1,650	274,000	1,670	274,000
New Orleans, LA	145	81,600	71	44,100
New York, NY	920	136,000	2,010	270,000
Nogales, AZ	63	6,770	34	3,420
Norfolk, VA	164	33,100	167	29,700
Pembina, ND	310	26,500	314	30,100
Philadelphia, PA	61	6,610	104	11,300
Portland, ME	67	6,400	109	11,900
Providence, RI	484	44,300	377	37,800
San Francisco, CA	995	134,000	1,170	159,000
Seattle, WA	483	68,900	363	63,800
Tampa, FL	106	10,300	155	16,600
Other	719 r	120,000 r	703	104,000
Total	7,440	1,130,000	8,950	1,290,000

rRevised.

[1]Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrappi
Export valuation is free alongside ship.

[2]Data are rounded to no more than three significant digits; may not add to totals shown.

Source: U.S. Census Bureau.

TABLE 11
U.S. EXPORTS OF IRON AND STEEL SCRAP, BY GRADE[1, 2]

(Thousand metric tons and thousand dollars)

Grade	2001		2002	
	Quantity	Value	Quantity	Value
No. 1 heavy-melting scrap	1,120	102,000	1,430	144,000
No. 2 heavy-melting scrap	266	22,700	385	37,300
No. 1 bundles	23	2,540	67	7,300
No. 2 bundles	235	21,000	76	6,680
Shredded steel scrap	2,390 r	225,000	3,000	306,000
Borings, shovelings, and turnings	157	10,100	123	9,150
Cut plate and structural	414	39,300	502	56,000
Tinned iron or steel	89	22,000	117	23,700
Remelting scrap ingots	5	4,650	5	3,730
Stainless steel scrap	438	270,000	342	252,000
Other alloy steel scrap	601	207,000	700	202,000
Other steel scrap[3]	1,030 r	102,000	1,360	133,000
Iron scrap	683	98,700	848	110,000
Total	7,440	1,130,000	8,950	1,290,000
Ships, boats, and other vessels for scrapping	49	2,750	40	3,230
Used rails for rerolling and other uses[4]	36	14,400	12	4,680
Grand total	7,530	1,150,000	9,000	1,300,000

[r]Revised.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Export valuation is free alongside ship.
[3]Includes tinplate and terneplate.
[4]Includes mixed (used plus new) rails. More information can be found in table 15.

Source: U.S. Census Bureau.

TABLE 12

U.S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL SCRAP, BY COUNTRY[1, 2]

(Thousand metric tons and thousand dollars)

	2001		2002	
Country	Quantity	Value	Quantity	Value
Bahamas, The	8	399	9	537
Belgium	11	6,550	95	9,750
Brazil	1	281	2	423
Canada	1,690 r	162,000 r	1,730	197,000
China	3	1,100	2	712
Colombia	(3)	121	1	779
Denmark	57	5,120	62	6,070
Dominican Republic	27	2,680	30	3,170
Egypt	2	1,260	2	1,270
Jamaica	4	364	--	--
Japan	45	2,080	5	1,120
Korea, Republic of	1	80	(3)	266
Mexico	51	18,800	80	28,100
Namibia	2	183	--	--
Netherlands	27	2,480	17	1,980
Poland	--	--	1	266
Russia	34	2,700	119	13,800
South Africa	--	--	10	2,750
Sweden	197	19,000	244	25,700
United Kingdom	464	45,800	708	77,700
Venezuela	1	632	3	2,090
Other	3 r	2,590 r	3	2,470
Total	2,630	274,000	3,130	376,000

rRevised. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrappi Import valuation is customs value. The United States imported scrap from 44 countries in 2002 and 49 countries in 2001.

[3]Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 13
U.S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL SCRAP,
BY CUSTOMS DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

	2001		2002	
Customs district	Quantity	Value	Quantity	Value
Buffalo, NY	141 r	22,100 r	157	38,800
Charleston, SC	628	60,400	1,030	113,000
Charlotte, NC	70	5,740	39	3,870
Chicago, IL	27	2,330	117	5,350
Cleveland, OH	19	1,390	4	321
Detroit, MI	1,070	94,000	894	95,200
El Paso, TX	11	2,360	8	2,670
Laredo, TX	25	10,900	41	14,900
Los Angeles, CA	26	485	3	1,700
Mobile, AL	2	194	45	5,120
New Orleans, LA	214	26,100	237	25,500
Ogdensburg, NY	43	6,280	19	5,380
Pembina, ND	10	3,410	31	6,410
Philadelphia, PA	(3)	291	79	9,520
San Diego, CA	11	4,000	23	7,330
Seattle, WA	304 r	24,800 r	346	28,400
Tampa, FL	12	968	19	1,680
Other	21	8,140	33	11,500
Total	2,630	274,000	3,130	376,000

rRevised.
[1]Data are rounded to no more than three significant digits; may not add to totals shown
[2]Excludes used rails for rerolling and other uses and ships, boats, and other vessels for scrapping. Import valuation is customs value.
[3]Less than 1/2 unit.

Source: U.S. Census Bureau.

TABLE 14

U.S. IMPORTS FOR CONSUMPTION OF IRON AND STEEL SCRAP, BY CLASS[1, 2]

(Thousand metric tons and thousand dollars)

Class	2001		2002	
	Quantity	Value	Quantity	Value
No. 1 heavy-melting scrap	13	1,080	15	1,210
No. 2 heavy-melting scrap	--	--	27	2,590
No. 1 bundles	247	23,800	252	30,300
No. 2 bundles	(4)	3	--	--
Shredded steel scrap	775	70,800	912	92,300
Borings, shovelings, and turnings	107	11,300	26	2,510
Cut plate and structural	50	4,820	80	8,270
Tinned iron or steel	6	1,040	13	1,820
Remelting scrap ingots	3	247	3	621
Stainless steel scrap	98 r	29,700 r	81	49,400
Other alloy steel scrap	199	25,100	271	40,000
Other steel scrap[3]	814 r	83,500 r	1,160	126,000
Iron scrap	319	22,600	284	21,300
Total	2,630	274,000	3,130	376,000
Ships, boats, and other vessels for scrapping	(4)	15	(4)	5
Used rails for rerolling and other uses[5]	175	23,700	195	26,900
Grand total	2,810	298,000	3,320	403,000

rRevised. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Import valuation is customs value.

[3]Includes tinplate and terneplate.

[4]Less than 1/2 unit.

[5]Includes mixed (used plus new) rails. More information can be found in table 16.

Source: U.S. Census Bureau.

TABLE 15

U.S. EXPORTS OF USED RAILS FOR REROLLING AND OTHER USES, BY COUNTRY[1, 2]

Country	2001 Quantity (metric tons)	2001 Value (thousands)	2002 Quantity (metric tons)	2002 Value (thousands)
Australia	1	$8	301	$310
Belize	147	29	5	8
Canada	18,100	5,620	3,710	932
Chile	140	261	181	155
Dominican Republic	498	309	533	206
Egypt	2,190	1,140	--	--
Germany	23	412	152	123
Honduras	3,620	787	2	10
Jamaica	--	--	282	310
Mexico	7,890	2,910	2,610	850
Panama	323	427	10	55
Peru	8	13	124	87
Russia	258	506	--	--
Taiwan	765	193	2,630	417
United Kingdom	1,180	510	44	45
Venezuela	419	353	649	638
Other	455 r	896 r	274	538
Total	36,100	14,400	11,500	4,680

rRevised. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Exports contain mixed (used plus new) rails totaling 2,800 metric tons (t) valued at $2,660,000 in 2002 and 16,800 t valued at $9,590,000 in 2001. Export valuation is free alongside ship.

Source: U.S. Census Bureau.

TABLE 16
U.S. IMPORTS FOR CONSUMPTION OF USED RAILS FOR REROLLING AND OTHER USES, BY COUNTRY[1, 2]

Country	2001 Quantity (metric tons)	2001 Value (thousands)	2002 Quantity (metric tons)	2002 Value (thousands)
Australia	--	--	58	$58
Austria	4	$4	394	309
Canada	61,900	8,650	43,000	6,920
France	390	119	--	--
Georgia	--	--	4,630	598
Germany	4	10	62	84
Honduras	463	57	--	--
Japan	2,050	643	292	186
Luxembourg	10	8	4	3
Netherlands	18	4	--	--
Russia	110,000	14,100	87,400	12,200
Ukraine	--	--	59,000	6,600
Venezuela	16	5	--	--
Other	8 r	15 r	1	9
Total	175,000	23,700	195,000	26,900

rRevised. -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Import valuation is customs value.

Source: U.S. Census Bureau.

TABLE 17

U.S. EXPORTS OF DIRECT-REDUCED IRON, BY COUNTRY[1, 2]

Country	2001 Quantity (metric tons)	2001 Value (thousands)	2002 Quantity (metric tons)	2002 Value (thousands)
Argentina	49	$5	--	--
Australia	--	--	29	$3
Finland	33	3	--	--
Germany	--	--	64	11
Mexico	685	72	811	86
Thailand	31	3	--	--
Total	798	83	904	100

-- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Data are for steelmaking-grade direct-reduced iron only.

Source: U.S. Census Bureau.

TABLE 18

U.S. IMPORTS FOR CONSUMPTION OF DIRECT-REDUCED IRON, BY COUNTRY[1, 2]

Country	2001		2002	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
Brazil	3,140	$553	3,150	$209
Canada	23	4	50,200	4,180
Sweden	19,000	943	--	--
Switzerland	30,700	2,580	--	--
Trinidad and Tobago	209,000	19,900	254,000	27,600
Ukraine	34,000	2,680	41,700	3,850
Venezuela	1,350,000	118,000	1,660,000	159,000
Total	1,650,000	145,000	2,010,000	195,000

-- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Data are for steelmaking-grade direct-reduced iron only.

Source: U.S. Census Bureau.

TABLE 19

U.S. EXPORTS OF PIG IRON, BY COUNTRY[1, 2]

Country	2001 Quantity (metric tons)	2001 Value (thousands)	2002 Quantity (metric tons)	2002 Value (thousands)
Canada	15,100	$2,140	7,020	$1,140
Chile	160	14	--	--
China	35	16	2,530	228
Colombia	171	31	100	31
Germany	68	6	141	17
Korea, Republic of	164	19 r	3	3
Mexico	16,100	2,250	23,000	3,360
South Africa	4,950	435	--	--
Sweden	6,580	579	--	--
Tunisia	--	--	495	43
Other	345 r	90 r	354	87
Total	43,700	5,580	33,600	4,910

rRevised. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes the following grades of pig iron: less than or equal to 0.5% phosphorus content, greater than 0.5% phosphorus content, and alloy grade. Export valuation is free alongside ship.

Source: U.S. Census Bureau.

TABLE 20

U.S. IMPORTS FOR CONSUMPTION OF PIG IRON, BY COUNTRY[1, 2]

Country	2001 Quantity (metric tons)	2001 Value (thousands)	2001 Quantity (metric tons)	2001 Value (thousands)
Bahamas, The	--	--	66,900	$7,430
Brazil	3,410,000	367,000	3,440,000	387,000
Canada	125,000	19,400	111,000	16,700
Colombia	--	--	218	164
Hungary	--	--	55,400	6,420
Japan	1	2	5	10
Latvia	57,000	5,810	--	--
Russia	523,000	57,600	479,000	54,100
South Africa	90,200	11,800	92,600	11,200
Ukraine	164,000	18,000	331,000	40,300
Venezuela	--	--	46,000	4,500
Total	4,370,000	479,000	4,620,000	527,000

[r]Revised. -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes the following grades of pig iron: less than or equal to 0.5% phosphorus content, greater than 0.5% phosphorus content, and alloy grade. Import valuation is customs value.

Source: U.S. Census Bureau.